

REMARKS

Claims 1-6 are all the claims pending in this Application. Claims 1 and 4 have been amended herein.

Claim Rejections-35 U.S.C. 103(a)

Claims 1-6 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ogawa et al. (U.S. 6,461,459; henceforth “Ogawa”) taken in view of Marchini et al. (U.S. 6,702,913; henceforth “Marchini”) and Hitotsuyanagi et al. (U.S. 2002/0046796; henceforth “Hitotsuyanagi”). Applicant respectfully traverses this rejection.

In rejecting the present claims, the Examiner asserts that Ogawa substantially teaches a method/apparatus as claimed. However, the Examiner acknowledges that Ogawa does not teach or suggest specific control of the rotation of the drum from minimum to maximum velocities relative to a fixed lateral movement speed as claimed. To cure this deficiency, the Examiner cites Marchini as teaching progressively applying strips in a manner that the angle relative to the mid-plane gradually increases towards the axial extremities of the strips. Applicant respectfully submits that the Examiner has misconstrued the reference.

Marchini shows in FIG. 5, a toroidal support 3 to which strip-like segments 5 are applied obliquely to the rotational axis of the toroidal support 3. The laying angle α at which the strip-like segments 5 are applied to the toroidal support 3 is changed depending upon the laying position. FIG. 6 shows a previous process in which strip-like segments 5 are applied obliquely to a toroidal support 3, in adjacent positions, from one axial extremity to the other in a known manner. Marchini states that this previous process is deficient because empty spaces S are formed between adjacent strip-like segments 5 because the laying angle changes to β near the

axial extremities as shown. To eliminate the deficiency, Marchini proposes attaching or pressing a longitudinally central portion of each of the strip-like segments 5 to the toroidal support 3 in proximity to the equatorial plane of the support 3, as most clearly shown in FIG. 5. It will be understood that the central portion of each strip-like segment 5 is applied to a middle position (at a radial line or an axis of correction Y-Y) of the outer surface of the toroidal support 3 with respect to the axial direction of the support (column 7, lines 49-55). While the toroidal support 3 is being rotated around its axis of rotation, the applying or pressing action to each strip-like segment 5 extends progressively towards the opposite extremities of the strip-like segment 5, starting from the central portion thereof (column 7, lines 60-62).

The pressing action to the strip-like segment 5 is carried out by a laying unit 10 shown in FIGS. 1- 4. The laying unit 10 has presser elements 11 attached to respective support elements 12 movable along a guide structure 13. Each strip-like segment 5 is cut by a cutting organ 7 (FIG. 1) and conveyed to the proximity of the toroidal support 3 by a gripping organ 8 to be passed upon holding elements 14 (FIG. 2) on the respective support elements 12. The strip-like segment 5 held on the holding elements 14 is then pressed down by the presser elements 11 in the central portion thereof, as shown in FIG. 3. Thereafter the presser elements 11 are moved away from each other as indicated in FIG. 4, by causing the support elements 12 to move away from each other. Thus the pressing action to the strip-like segment 5 extends progressively towards the opposite extremities thereof, starting from the central portion thereof. During the extension of the pressing action from the central portion to the opposite extremities of the strip-like segment 5, the direction of the laying unit 10 and the rotational speed of the toroidal support 3 are controlled to prevent the formation of the empty space S. During this time, the strip-like

segment 5 is caused to make angular displacement or rotation around the axis of correction Y-Y (FIG. 5).

It will be understood that the method/apparatus of Marchini requires a laying unit 10 of complicated structure to lay the strip-like segment 5, and moreover requires cutting a strip material into individual strip-like segments 5 before applying the segments to the toroidal support 3. Furthermore, the method/apparatus of Marchini requires each strip-like segment 5 to make angular displacement or rotation relative to the toroidal support 3 to prevent formation of the empty spaces S. The method/apparatus of Marchini also requires attaching by pressing a central portion of each cut strip-like segment 5 in the proximity of the equatorial plane of the toroidal support 3 and then the pressing extends from the central portion to the opposite extremities of each strip-like segment 5. Furthermore, relative angular rotation about the axis of correction Y-Y between the strip-like segment 5 and the toroidal support 3 is realized either by rotating the toroidal support 3 about the axis of correction Y-Y (column 10, lines 25-26), which is not the rotational axis X-X of the toroidal support 3, or by actuating or moving the laying unit 10 relative to the toroidal support 3 (column 10, lines 28-29). Although the toroidal support 3 is rotated about the axis X-X, the rotational speed of the toroidal support 3 does not appear to be varied.

Hitotsuyanagi does not cure this deficiency. Hitotsuyanagi teaches, in paragraphs [0125]-[0131] and Fig. 11, varying a strip applying angle when applying a strip 8a to a rotation drum 21. It is to be noted however that Hitotsuyanagi does not teach varying drum rotational speed gradually from a minimum value to a maximum value and vice versa. The method/apparatus shown in Fig. 11 is used to produce a carcass ply shown in FIG. 3 (see

paragraph [0125]). As shown in FIG. 3, the intermediate region of the carcass ply 8a has inclined straight parallel lines, indicating that the drum rotational speed is maintained constant in the intermediate region and that a gradual change in the drum rotational speed only occurs in limited regions between the intermediate region and the opposite extremity regions.. In this connection, Paragraphs [0128] to [0129] states to the effect that rotation drum moves at a constant speed between the right shoulder portion and the left shoulder portion. The intermediate region occupies a major portion of the carcass ply 8a as will be noted from FIGS. 3 and 11. This is different from gradual and continuous variation of the angular velocity of the forming drum between a minimum value and a maximum value and gradual and continuous variation of the laying angle throughout the outer surface of the forming drum in the present invention. The manner in which the angular velocity of the forming drum is varied in Hitotsuyanagi et al. is different from that of the claimed invention because the method/apparatus of Hitotsuyanagi et al. is intended to apply ply-cords to a simple cylindrical surface of a drum. The method/apparatus of Hitotsuyanagi et al. take into consideration a forming drum having a convex outer surface having an outwardly convex cross section as used in the present invention.

Applicant also notes from the foregoing that Marchini et al. discloses a method/apparatus different in principle from that of the claimed invention and fails to teach varying the angular velocity of the forming drum in a specific claimed way. Further, Hitotsuyanagi et al. teaches using varying rotational velocity of a rotation drum but the manner in which the rotational velocity is varied is different from that of the claimed invention since Hitotsuyanagi et al. does not consider a forming drum having a convex outer surface having an outwardly convex cross section as used in the present invention. Therefore, persons skilled in the art would not be

motivated to use the inventive principle of Marchini et al. or Hitotsuyanagi et al. in the method/apparatus of Ogawa et al.

Further, Ogawa et al. shows in FIGS. 7 and 8 a simple cylindrical surface of a drum. Therefore, Applicant submits that the method/apparatus of Ogawa et al. cannot be a basis for asserting obviousness of the present invention which aims at solving an underlying problem relating to a forming drum having a convex outer surface and an outwardly convex cross section, when Ogawa does not have such a structure. Finally, Applicant submits that the specific feature claimed in claim 3 is not taught at all in any one of the references cited.

Claims 1-6 stand rejected under 35 U.S.C. § 102(a) and/or (e) (for U.S. Patent publication) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Ohkubo (U.S. 2003/0024627) or equivalent EP 1279485 to Ohkubo. Applicant respectfully traverses this rejection.

Applicant submits that Ohkubo (US 2003/0024627) and EP 1279485 to Ohkubo can be removed as a references by perfecting a claim to foreign priority. The instant application claims priority under 35 U.S.C. § 119 from Japanese Patent Application No. 2002-373540, which has a priority date of December 25, 2002. The publication date of Ohkubo (US 2003/0024627), February 6, 2003, is after the priority date of the Japanese Patent Application from which the instant application claims priority. Furthermore, the publication date of EP 1279485 to Ohkubo January 29, 2003, is after the priority date of the Japanese Patent Application from which the instant application claims priority. Therefore, these applications may be removed as a prior art reference by perfecting the claim to foreign priority by filing a verified translation of the foreign priority document.

Accordingly, Applicant is submitting a verified translation of Japanese Patent Application No. 2002-373540 to perfect the claim to priority under 35 U.S.C. § 119. Applicant respectfully submits that claims 1-6 are fully supported by the priority document. Since Applicant has perfected priority for the present application and since the priority documents fully support the claimed subject matter, Applicant submits that Ohkubo (US 2003/0024627) and EP 1279485 to Ohkubo do not qualify as prior art.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880 via EFS payment screen. Please also credit any overpayments to said Deposit Account.

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